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COMBINED EFFECT OF NICOTINE AND TOBACCO MOSAIC VIRUS
ON DOPAMINE RECEPTORS

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Nicotine¹ and Tobacco Mosaic Virus (TMV)² are present in every tobacco product. Studies investigating the role of nicotine have suggested its effect in the maintenance of smoking and tobacco consumption behaviour. It also has a mild stimulatory action on the central nervous system. Besides this, TMV which is although non-pathogenic and does not multiply in the animal host has been found to effect the synaptic mechanism. In order to study the single and combined action of nicotine and TMV on dopamine receptors, nicotine (1 mg/Kg) and TMV (10 ug/animal) i.v. were given to rats for 2 weeks. Receptor binding studies carried out on brain synaptosomes using ³H-spiroperidol indicated highest binding in the group of rats which received combined doses of nicotine and TMV. Behavioural studies were also performed to measure amphetamine (2.5 mg/Kg, i.p.) induced stereotypy at 10 and 30 min. Within 10 min amphetamine produced increased movements and stereotypy in normal and nicotine treated rats only, but this behaviour was observed in the group receiving TMV alone and nicotine + TMV only after a lapse of 30 min. This delayed onset of stereotype behaviour in the latter groups suggest disfunctioning of dopaminergic neurons due to nicotine and TMV. Increased dopamine receptor binding in conjugation with delayed amphetamine response suggest for synergistic action of nicotine with TMV in the synaptic process.

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